



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/669,909	09/24/2003	James K. Guy	7784-000651	5778

27572 7590 09/16/2005

HARNESS, DICKEY & PIERCE, P.L.C.  
P.O. BOX 828  
BLOOMFIELD HILLS, MI 48303

EXAMINER

RIELLEY, ELIZABETH A

ART UNIT PAPER NUMBER

2879

DATE MAILED: 09/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/669,909

Applicant(s)

GUY, JAMES K.

Examiner

Elizabeth A. Rielley

Art Unit

2879

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 24 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 September 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 9/24/03
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Drawings*

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: 36 in figure 1. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 4-13, 19, 22, and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Burkarth (US 3703635).

In regard to claim 1, Burkarth ('635) teaches a reflector body (10; figure 11; column 7 line 13- column 8 line 33), comprising: a curved body portion (10), including: (i) a first inner surface conformable about a first geometric curve (44); and (ii) a second inner surface conformable about a second geometric curve (42); and a light discharge end operable to discharge light rays incident on each of the first and second inner surfaces (26).

In regard to claim 2, Burkarth ('635) teaches an outer surface (side of 44 facing 10) conformable about the first geometric curve.

In regard to claim 4, Burkarth ('635) teaches a transition area (166 and 168; see figure 10) formable between the first inner surface (44) and the second inner surface (42); and a plurality of through apertures (166 and 168; see figures 10 and 11) spaced about the curved body portion; wherein each aperture is formable between the outer surface and the transition area (see figure 10).

In regard to claim 5, Burkarth ('635) teaches that each aperture is oriented normal to the outer surface (166 and 168; see figure 10).

In regard to claim 6, Burkarth ('635) teaches that each aperture may be oriented at an acute angle to the outer surface, the acute angle measurable from a horizontal axis of the reflector (due to the adjustable nature of reflector 44, the aperture caused by the separation of reflectors 42 and 44 would then naturally become angled; see figure 11; column 3 line 25- column 4 line 5).

In regard to claim 7, Burkarth ('635) teaches the first geometric curve (44) being configurable as a first ellipse; and the second geometric curve (42) being configurable as a second ellipse (column 3 lines 25-52; since an ellipse is the formation of two parabola curves), the second ellipse concentrically positionable within the first ellipse (see figure 11) when the ellipse shape is continued past the reflector itself.

In regard to claim 8, Burkarth ('635) teaches the first geometric curve (44) being configurable as a first parabola; and the second geometric curve (42) being configurable as a second parabola (column 3 lines 25-52), the second parabola concentrically positionable within the first parabola (see figure 11).

In regard to claim 9, Burkarth ('635) teaches each of the first (44) and second (42) inner surfaces comprise a reflective surface (column 3 lines 25-45).

In regard to claim 10, Burkarth ('635) teaches a mount end (16); wherein the curved body portion is integrally joined to the mount end (see figure 11).

In regard to claim 11, Burkarth ('635) teaches a reflector assembly (see figure 11), comprising: at least one reflector body (10; column 7 line 13 – column 8 line 12) including: (i) an inner cavity (not numbered; see figure 11) including: (a) a first inner surface conformable along a first geometric curve (44); and (b) a second inner surface conformable along a second geometric curve (42); and (ii) an outer surface conformable about the first geometric curve (outer surface of 44 on the side of 10); a plurality of through apertures spaced about the reflector body (166, 168; see figure 10), each aperture formable between the outer surface and a transition region (166 and 168) between the first inner surface and the second inner surface (see figures 10 and 11); a coolant flow source (30) directing a coolant toward the at

Art Unit: 2879

least one reflector body (see figure 11); wherein a first portion of the coolant contacts the outer surface, and a second portion of the coolant is directed by the apertures into the inner cavity (see arrows on figure 11; column 8 lines 26-61).

In regard to claim 12, Burkarth ('635) teaches a plenum housing (10; column 7 line 1- column 8 line 12) circumferentially surrounding at least the reflector body (44 and 42), the plenum housing directing the first portion of the coolant about the outer surface (see figure 11).

In regard to claim 13, Burkarth ('635) teaches the coolant flow source (30) is aligned with a reflector body (44 and 42) longitudinal centerline, the coolant flow source initially directing the coolant within the plenum housing and substantially parallel to the longitudinal centerline (see figure 11).

In regard to claim 19, Burkarth ('635) teaches the coolant flow source comprises a fan (30, 80) mountable to the plenum housing (10; see figure 11).

In regard to claims 22 and 23, Burkarth ('635) teaches the coolant comprises a gas, which is air (column 7 lines 28-43).

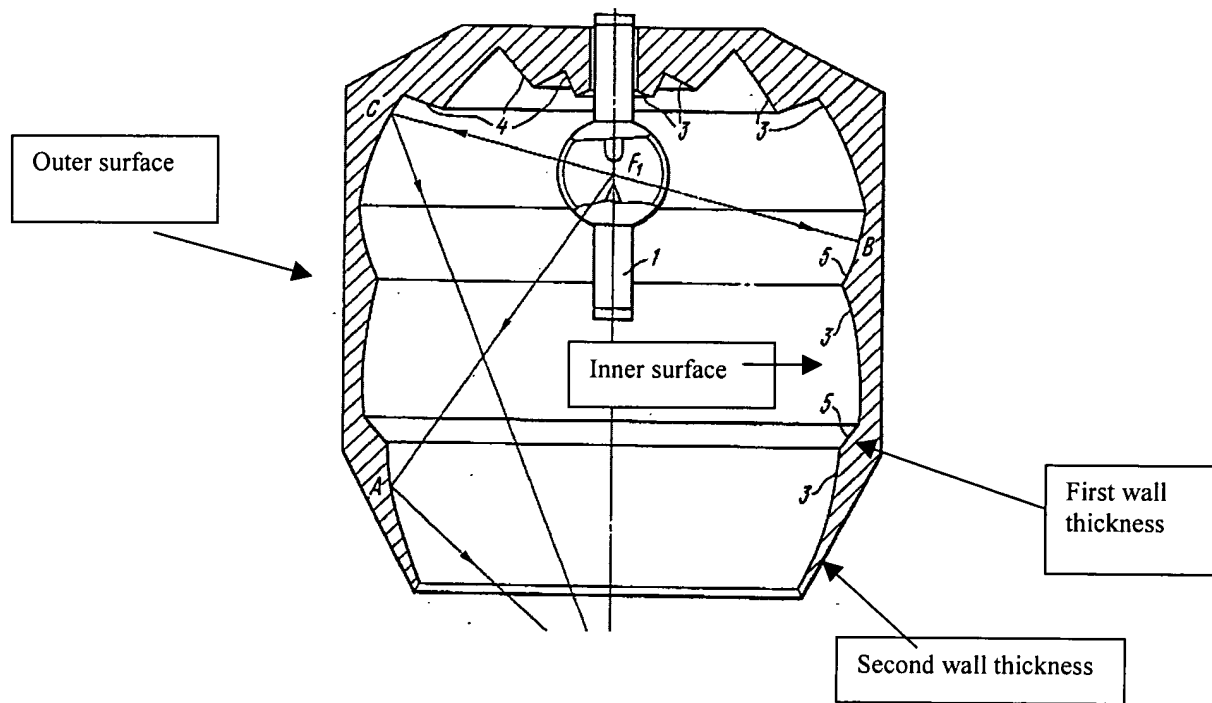
### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3 and 24-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burkarth (US 3703635) in view of Oparin et al (US 554831)..

In regard to claim 3, Burkarth ('635) teaches all the limitations set forth, as described above, except a first wall thickness between the outer surface and the first inner surface; and a second wall thickness between the outer surface and the second inner surface; wherein the second wall thickness is greater than the first wall thickness. Oparin et al ('831) teach a first wall thickness (5, at the bottom right; figure 1; column 3 line 7 to column 4 line 10) between the outer surface (not numbered) and the first inner surface (5); and a second wall thickness (3, at the bottom right; figure 1) between the outer surface (not numbered) and the second inner surface (3); wherein the second wall thickness is greater than the first wall thickness (see figure 1 below) in order to reduce the thermal load on the reflector walls (column 1 lines 43-55). Hence, it would have been obvious at the time of the invention to one of ordinary skill in the art to combine the reflector body of Burkarth ('635) with the thickness of the reflector walls of Oparin et al ('831). Motivation to combine would be to reduce the thermal load on the reflector walls.



In regard to claim 24, Burkarth ('635) teaches a method to construct a reflector assembly (see figure 11), comprising: forming an inner cavity (not numbered) of a reflector body about concentric geometric curves (44, 42; column 7 line 10 to column 8 line 12); creating a plurality of apertures (166, 168; see figure 10) through the reflector body; aligning a coolant source (80) with the apertures; and positioning an arc lamp (26) within the reflector body away from a direct impingement path between a coolant entering the apertures and the arc lamp (see figure 11). Burkarth ('635) is silent regarding the limitations of reducing a reflector body wall thickness in an area local to a light discharge end of the reflector body; and when creating the plurality of apertures (166, 168; see figure 10), the apertures through the reflector body outside of the area having reduced wall thickness. Oparin et al ('831) teach reducing a reflector body (figure 1; column 3 line 7 to column 4 line 10) wall thickness in an area local to a light discharge end (1) of the reflector body (3; see figure 1) in order to reduce the thermal load on the reflector walls (column 1 lines 43-55). When in combination with Burkarth ('635), the apertures of



Art Unit: 2879

Burkath ('635), the reflector body of figure 1 would go through the wall to the outside area (not labeled) of the reduced wall thickness. Hence, it would have been obvious at the time of the invention to one of ordinary skill in the art to combine the reflector body and apertures of Burkath ('635) with the thickness of the reflector walls of Oparin et al ('831). Motivation to combine would be to reduce the thermal load on the reflector walls.

In regard to claim 25, Burkath ('635) teaches positioning the plurality of apertures (via 44) such that a plurality of light rays from the arc lamp completely reflect out of the light discharge end and are precluded from directly entering the apertures (abstract).

In regard to claim 26, Burkath ('635) teaches positioning the plurality of apertures on a common arc transposed about the outer wall (see figure 11; column 3 line 45 to column 4 line 5).

In regard to claim 27, Burkath ('635) teaches all the limitations set forth, as described above, including creating a plurality of apertures through the reflector body immediately adjacent to the two different geometric curves (see figures 10 and 11). Burkath is silent regarding that the walls displaying the different curvature have reduced wall thickness. Oparin et al ('831) teach that the wall of a reflector body (figure 1) in an area between curvatures (3 and 5) begin a reduction of thickness (column 3 line 7 to column 4 line 10) in order to reduce the thermal load on the reflector walls (column 1 lines 43-55). Hence, it would have been obvious at the time of the invention to one of ordinary skill in the art to combine the reflector body and apertures of Burkath ('635) with the thickness of the reflector walls of Oparin et al ('831). Motivation to combine would be to reduce the thermal load on the reflector walls.

In regard to claim 28, Burkarth ('635) teaches forming a first inner wall along a first ellipse (44); and creating a second inner wall about a second ellipse (42), the second ellipse locatable concentrically within the first ellipse (see figure 11).

In regard to claim 29, Burkarth ('635) teaches forming a first inner wall about a first parabola (44); and creating a second inner wall about a second parabola (42), the second parabola locatable concentrically within the first parabola (see figure 11).

In regard to claim 30, Burkarth ('635) teach positioning the arc lamp (26) along a longitudinal centerline of the reflector body (see figure 11).

In regard to claim 31, Burkarth ('635) teach joining a pair of reflector bodies (44, 42) along a common longitudinal centerline (not labeled; see figure 11).

In regard to claim 32, Burkarth ('635) teach enclosing the reflector body within a plenum housing (10); and connecting the coolant source to the plenum housing (30, 80; see figure 11).

Claims 14-18 and 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burkarth (US 3703635) in view of Walsh et al (US 3515930).

In regard to claim 14, Burkarth ('635) teach all the limitations set forth, as described above, including the coolant flow source (30, 80) being aligned perpendicular to a common longitudinal centerline of a pair of reflector bodies (42, 44; see figure 11), the coolant flow source directing the coolant within the plenum housing (10) and initially substantially perpendicular to the common longitudinal

centerline (see figure 10, arrows 166, 168). Burkarth is silent regarding the limitations of a joined pair of reflector bodies that face opposite ends of the light discharge tube. Walsh et al ('930) teach a joined pair of reflector bodies (9; see figure 4) that face opposite ends of the light discharge tube (2; see figure 4) in order to shorten the overall lamp length (column 1 lines 55 to 69). Hence, it would have been obvious at the time of the invention to one of ordinary skill in the art to combine the reflector assembly of Burkarth with the reflector locations of Walsh et al. Motivation to combine would be to shorten the overall lamp length.

In regard to claim 15, Burkarth ('635) teach all the limitations set forth, as described above, except a first end having an electrically nonconductive support; and a second open end. Walsh et al ('930) teach a first end having an electrically nonconductive support (22); and a second open end (not numbered; see figure 3) in order to avoid over heating (column 3 lines 30-39). Hence, it would have been obvious at the time of the invention to one of ordinary skill in the art to combine the reflector assembly of Burkarth with the nonconductive support of Walsh et al. Motivation to combine would be to avoid over heating the lamp.

In regard to claim 16, Burkarth ('635) teach an arc lamp (26) positionable within the inner cavity (see figure 10).

In regard to claims 17 and 20, Burkarth ('635) teach a first lead wire (74; figure 1; column 4 lines 6-30) electrically connectable to the arc lamp (26) through a support (72); the arc lamp is axially positioned adjacent a support (72) such that the coolant entering the apertures (166, 168; see figure 10) is directed away from a direct impingent path with the arc lamp; and a second lead wire (24; column 2 lines 54-60) electrically connectable to the arc lamp through the open end of the reflector body (see figure 1).

Burkath ('635) is silent regarding the limitation that support in nonconductive. Walsh et al ('930) teach a non-conductive support for the electrode leads (13) in order to avoid over heating the lamp (column 3 lines 19-39). Hence, it would have been obvious at the time of the invention to one of ordinary skill in the art to combine the reflector assembly of Burkath with the nonconductive support of Walsh et al.

Motivation to combine would be to avoid over heating the lamp.

In regard to claim 18, Burkath ('635) teach bulb mount (22; column 2 line 46 to column 3 line 24) disposed across the open end of the reflector assembly (see figure 1) and supporting the second lead wire (24); and a plurality of coolant flow discharge ports formable in the bulb mount (36).

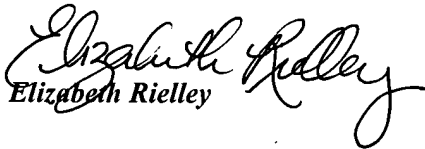
In regard to claim 21, Burkath 9'635) teach an internal edge (not numbered; figure 11) of the second inner surface (42) adjacent to each aperture (166, 168; figure 10), wherein any one of a plurality of light rays generated by the arc lamp strikes one of the internal edge (not numbered) and the first inner surface but is precluded by the internal edge from entering any one of the apertures (via 40 and 168).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elizabeth A. Rielley whose telephone number is 571-272-2117. The examiner can normally be reached on Monday - Friday 7:30 - 4:00.

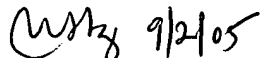
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimeshkumar Patel can be reached on 571-272-2457. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



*Elizabeth Rielley*

**Examiner**  
**Art Unit 2879**



**MARICELI SANTIAGO**  
**PRIMARY EXAMINER**